

Products...FEA...TRM...Definitions

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1. FEA Technical Reference Model (TRM)

The Federal Enterprise Architecture (FEA) Technical Reference Model (TRM) provides a foundation to describe the standards, specifications, and technologies supporting the secure delivery, exchange, and construction of business (or Service) components and e-Gov solutions. The FEA TRM unifies existing Agency TRMs and electronic Government (e-Gov) guidance by providing a foundation to advance the re-use of technology and component services from a Government-wide perspective.

1.1. Component Framework

The Component Framework Area defines the underlying foundation and technical elements by which Service Components are built, integrated and deployed across Component-Based and Distributed Architectures. The Component Framework consists of the design of application or system software that incorporates interfaces for interacting with other programs and for future flexibility and expandability. This includes, but is not limited to, modules that are designed to interoperate with each other at runtime.

1.1.1. Business Logic

Defines the software, protocol or method in which business rules are enforced within applications.

1.1.1.1. Platform Dependent

Consists of the programming languages and methods for developing software on a specific operating system or platform.

C-Sharp (C#)

An object-oriented programming language from Microsoft that is based on C++ with elements from Visual Basic and Java.

<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000520>

VB Script

A scripting language from Microsoft. A subset of Visual Basic, VBScript is widely used on the Web for both client processing within a Web page and server-side processing in Active Server Pages (ASPs). <http://www.w3schools.com/vbscript/default.asp>

Visual Basic

A version of the BASIC programming language from Microsoft specialized for developing Windows applications.

<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000520>

Visual Basic .Net (VB.Net)

A version of the BASIC programming language from Microsoft specialized for developing Windows applications that is used within Microsoft's .NET environment.

<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000520>

1.1.1.2. Platform Independent

Consists of all software languages that are able to execute and run on any type of operating system or platform.

C, C++

C is a procedure-oriented programming language. C++ is an object-oriented version of C that has been widely used to develop enterprise and commercial applications. <http://www.accu.org/>

Enterprise Java Beans (EJB)

A software component in Sun's J2EE platform, which provides a pure Java environment for developing and running distributed applications. <http://java.sun.com/j2se/>

Java Portlet API (JSR 168)

Java Portlet API enables interoperability between Portlets and Portals by defining APIs that address the areas of aggregation, personalization, presentation and security.

<http://www.jcp.org/jsr/detail/168.jsp>

Java Servlet (JSR 53)

Java Servlets provide reusable web components that can be incorporated into portals.

<http://www.jcp.org/aboutJava/communityprocess/final/jsr053/>

JavaScript

A scripting language that runs within a web browser. <http://www.mozilla.org/js/>

Linux

Linux is an open source operating system that runs on multiple hardware platforms. With the

ability to run on many platforms, including the PC and Macintosh, Linux has become an alternative to proprietary systems.

Web Services for Remote Portals (WSRP)

WSRP defines an XML and Web services standard that will allow the plug-n-play of visual, user-facing Web services with portals or other intermediary Web applications.

<http://www.oasis-open.org/committees/wsrp>

1.1.2. Data Interchange

Data Interchange defines the methods in which data is transferred and represented in and between software applications.

1.1.2.1. Data Exchange

Data Exchange is concerned with the sending of data over a communications network and the definition of data communicated from one application to another. Data Exchange provides the communications common denominator between disparate systems.

Electronic Business using XML (ebXML)

A modular suite of specifications that enables enterprises to conduct business over the Internet: exchanging business messages, conducting trading relationships, communicating data in common terms and defining and registering business processes. <http://www.ebxml.org/>

Resource Description Framework (RDF)

RDF provides a lightweight ontology system to support the exchange of knowledge on the Web. It integrates a variety of web-based metadata activities including sitemaps, content ratings, stream channel definitions, search engine data collection (web crawling), digital library collections, and distributed authoring, using XML as interchange syntax. RDF is the foundation for the Semantic Web envisioned by Tim Berners-Lee - an extension of the current web in which information is given well-defined

Simple Object Access Protocol (SOAP)

SOAP provides HTTP/XML based remote procedure call capabilities for XML Web Services.

<http://www.w3.org/2000/xml/Group/>

<http://msdn.microsoft.com/msdnmag/issues/0300/soap/soap.asp>

Web Services User Interface (WSUI)

WSUI uses a simple schema for describing a WSUI "component" that can be used in a portal to call backend SOAP and XML services. WSUI uses XSLT stylesheets to construct user-facing views to enable users to interact with the services. <http://www.wsui.org/>

XMI

Enables easy interchange of metadata between modeling tools (based on the OMG UML) and metadata repositories (OMG MOF based) in distributed heterogeneous environments. XMI integrates three key industry standards: XML, UML, and MOF. The integration of these three standards into XMI marries the best of OMG and W3C metadata and modeling technologies, allowing developers of distributed systems to share object models and other metadata over the Internet. <http://www.omg.org/technology/documents/form/>.

XQuery

A language used for processing and evaluating XML data. The XQuery language provides results of expressions allowing the use of evaluations to the implementation of XQuery. <http://www.w3.org/XML/Query>

1.1.3. Data Management

The management of all data/information in an organization. It includes data administration, the standards for defining data and the way in which people perceive and use it.

1.1.3.1. Database Connectivity

Defines the protocol or method in which an application connects to a data store or data base.

Active Data Objects (ADO)

(ActiveX Data Objects) A programming interface from Microsoft that is designed as "the" Microsoft standard for data access. First used with Internet Information Server, ADO is a set of COM objects that provides an interface to OLE DB. The three primary objects are Connection, Command and Record set.

<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000520>

Active Data Objects .Net (ADO.Net)

ADO.NET is the data-access component of the Microsoft's .NET Framework. It provides an extensive set of classes that facilitate efficient access to data from a large variety of sources, enable sophisticated manipulation and sorting of data

<http://support.microsoft.com/default.aspx?xmlid=fh%3BEN-US%3Badonet>

Data Access Objects (DAO)

DAO is the Microsoft library for accessing Microsoft Jet engine data sources such as Microsoft Office-based applications. DAO is replaced by ADO and ADO.Net.

http://msdn.microsoft.com/library/default.asp?URL=/library/devprods/vs6/visualc/vctutor/_gs'a_brief_overview

DB2 Connector

An IBM connectivity API to access DB2 sources. <http://www.ibm.com>

JDBC

JDBC provides access to virtually any tabular data source from the Java programming language. It provides cross-DBMS connectivity to a wide range of SQL databases, and other tabular data sources, such as spreadsheets or flat files. <http://java.sun.com/products/jdbc/>

Object Linking and Embedding/Database (OLE/DB)

A Microsoft low-level API designed to provide connections to different data sources. OLE/DB allowed connectivity to ODBC-based SQL providers/sources as well as other formats such as text and comma-delimited.

<http://wombat.doc.ic.ac.uk/foldoc/foldoc.cgi?Object+Linking+and+Embedding>

Open Database Connectivity (ODBC)

A database programming interface from Microsoft that provides a common language for Windows applications to access databases on a network. ODBC is made up of the function calls programmers write into their applications and the ODBC drivers themselves.

<http://www.webopedia.com/TERM/O/ODBC.html>

1.1.3.2. Reporting and Analysis

Consist of the tools, languages and protocols used to extract data from a data store and process it into useful information.

eXtensible Business Reporting Language (XBRL)

Extensible Business Reporting Language (XBRL is an open specification which uses XML-based data tags to describe financial statements for both public and private companies.

<http://www.xbrl.org/>

Java Online Analytical Processing (JOLAP)

JOLAP is a Java API for the J2EE environment that supports the creation and maintenance of OLAP data and metadata, in a vendor-independent manner. <http://www.jcp.org/jsr/detail/69.jsp>

Online Analytical Processing (OLAP)

(On-Line Analytical Processing) - Decision support software that allows the user to quickly analyze information that has been summarized into multidimensional views and hierarchies. <http://www.olapcouncil.org/>

XML for Analysis

XML for Analysis uses the Simple Object Access Protocol (SOAP) to let Web browser-based programs access back-end data sources for data analysis. The specification allows companies to build online analytical processing (OLAP) and data mining applications that work over the Web. <http://www.microsoft.com/data/xml/XMLAnalysis.htm>

1.1.4. Presentation / Interface

This defines the connection between the user and the software, consisting of the presentation that is physically represented on the screen.

1.1.4.1. Content Rendering

This defines the software and protocols used for transforming data for presentation in a graphical user interface.

Cascading Style Sheets (CSS)

A style sheet format for HTML documents endorsed by the World Wide Web Consortium. CSS1 (Version 1.0) provides hundreds of layout settings that can be applied to all the subsequent HTML pages that are downloaded. <http://www.wdvl.com/Authoring/Style/Sheets/>

Dynamic HTML (DHTML)

A collective term for a combination of new Hypertext Markup Language (HTML) tags and options, style sheets, and programming that will allow Web pages that are more animated and more responsive to user interaction than previous versions of HTML. <http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000522>

eXtensible HTML (XHTML)

The W3C's recommendation for the next generation of HTML leveraging XML

<http://www.w3.org/TR/2001/REC-xhtml11-20010531/>

1.1.4.2. Dynamic / Server-Side Display

This consists of the software that is used to create graphical user interfaces with the ability to change while the program is running.

Active Server Pages (ASP)

A Web server technology from Microsoft that allows for the creation of dynamic, interactive sessions with the user.

<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000522>

Active Server Pages .Net (ASP.Net)

ASP.NET is a set of technologies in the Microsoft .NET Framework for building Web applications and XML Web Services. ASP.NET pages execute on the server and generate markup such as HTML, WML or XML that is sent to a desktop or mobile browser.

<http://msdn.microsoft.com/library/default.asp?url=/nhp/Default.asp?contentid=28000440>

Java Server Pages (JSP)

JSP is part of Sun's J2EE architecture and provide template capabilities for presenting dynamically generated Web content. JSPs are text files written in a combination of standard HTML tags, JSP tags, and Java code. <http://java.sun.com/products/jsp/>

1.1.4.3. Static Display

Static Display consists of the software protocols that are used to create a pre-defined, unchanging graphical interface between the user and the software.

Hyper Text Markup Language (HTML)

The language used to create Web documents and a subset of Standard Generalized Markup Language (SGML) <http://www.w3.org/MarkUp/>

1.1.4.4. Wireless / Mobile / Voice

Consists of the software and protocols used for wireless and voice-enabled presentation devices.

Voice XML (VXML)

VXML is an XML vocabulary for specifying IVR (Integrated Voice Response) Systems

<http://www.w3c.org/Voice/> <http://www.voicexml.org/>

Wireless Markup Language (WML)

An XML-based protocol designed for Wireless devices.
<http://www.oasis-open.org/cover/wap-wml.html>

XHTML Mobile Profile (XHTMLMP)

XHTMLMP is designed for resource-constrained Web clients that do not support the full set of XHTML features, such as mobile phones, PDAs, pagers and set-top boxes. It extends XHTML Basic with modules, elements and attributes to provide a richer authoring language. XHTML replaces the Wireless Markup Language (WML).
<http://www.wapforum.org/what/technical.htm>

1.1.5. Security

Security defines the methods of protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide integrity, confidentiality and availability. Biometrics, two-factor identification, encryption, and technologies based on the NIST FIPS-140 standards are evolving areas of focus.

1.1.5.1. Certificates / Digital Signature

Software used by a certification authority (CA) to issue digital certificates and secure access to information.

Digital Certificate Authentication

Authentication implementation for controlling access to network and internet resources through managing user identification. An electronic document, digital certificate, is issued and used to prove identity and public key ownership over the network or internet.

FIPS 186

The DSS standard specifies a digital signature algorithm (DSA) appropriate for applications requiring a digital, rather than written, signature. The DSA authenticates the integrity of the signed data and the identity of the signatory. The DSA may also be used to prove that data was actually signed by the generator of the signature. <http://www.dice.ucl.ac.be/crypto/standards.html>

Secure Sockets Layer (SSL)

An open, non-proprietary protocol for securing data communications across computer networks. SSL is sandwiched between the application protocol (such as HTTP, Telnet, FTP, and NNTP) and the connection protocol (such as TCP/IP, UDP). SSL provides server authentication, message integrity, data encryption, and optional client authentication for TCP/IP connections. <http://www.webopedia.com/TERM/S/SSL.html>

1.1.5.2. Supporting Security Services

These consist of the different protocols and components to be used in addition to certificates and digital signatures.

Secure Multipurpose Internet Mail Extensions (S/MIME)

Provides a consistent way to send and receive secure MIME data. Based on the Internet MIME standard, S/MIME provides cryptographic security services for electronic messaging applications: authentication, message integrity and non-repudiation of origin (using digital signatures) and data confidentiality (using encryption). S/MIME is not restricted to mail; it can be used with any transport mechanism that transports MIME data, such as HTTP. <http://www.ietf.org/html.charters/smime-charter.html>

Secure Shell (SSH)

A strong method of performing client authentication. Because it supports authentication, compression, confidentiality and integrity, SSH is used frequently on the Internet. SSH have two important components, RSA certificate exchange for authentication and Triple DES for session encryption. <http://www.ietf.org/internet-drafts/draft-ietf-secsh-architecture-13.txt>
<http://www.ietf.org/internet-drafts/draft-ietf-secsh-auth-kbdinteract-05.txt>

Security Assertion Markup Language (SAML)

An XML-based framework for exchanging security information expressed in the form of assertions about subjects, where a subject is an entity (either human or computer) that has an identity in some security domain. SAML is expected to play a key role in the Federal-wide E-Authentication initiative, and is supported by both the Liberty Alliance and WS-Security. <http://www.oasis-open.org/committees/security/> <http://xml.coverpages.org/saml.html>

Simple Key Management Protocol (SKIP)

A protocol developed by Sun Microsystems to handle key management across IP networks and VPNs. <http://www.networksorcery.com/enp/rfc/rfc2356.txt>

Transport Layer Security (TLS)

Standard for the next generation SSL. TLS provides communications privacy over the Internet. The protocol allows client/server applications to communicate in a way that is designed to prevent eavesdropping, tampering, or message forgery.
<http://www.ietf.org/html.charters/tls-charter.html>

Web Services Security (WS-Security)

Describes enhancements to SOAP messaging to provide message integrity, message confidentiality, and single message authentication. These mechanisms can be used to accommodate a wide variety of security models and encryption technologies including X.509, Kerberos, and SAML. <http://www.oasis-open.org/committees/wss/>
<http://www-106.ibm.com/developerworks/library/ws-secure/>

1.2. Service Access and Delivery

Refers to the collection standard and specifications to support external access, exchange, and delivery of Service Components or capabilities. This area also includes the Legislative and Regulator requirements governing the access and usage of the specific Service Component.

1.2.1. Access Channels

Access Channels define the interface between an application and its users, whether it is a browser, personal digital assistant or other medium.

1.2.1.1. Collaboration Communications

Define the forms of electronic exchange of messages, documents, or other information. Electronic communication provides efficiency through expedited time-of-delivery.

Electronic Mail (E-mail)

E-mail (Electronic mail) is the exchange of computer-generated and stored messages by telecommunication. An E-mail can be created manually via messaging applications or dynamically, programmatically such as automated response systems.

Facsimile (Fax)

A fax is the digitized image of text and/or pictures, represented as a series of dots (bit map). Faxes are sent and received through telecommunication channels such as telephone or internet.

Kiosk

A kiosk is a small physical structure (often including a computer and a display screen) that displays information for people walking by. Kiosks are common in public buildings. Kiosks are also used at trade shows and professional conferences.

1.2.1.2. Other Electronic Channels

Define the other various mediums of information exchange and interface between a user and an application.

System To System

System to System involves at least two computers that exchange data or interact with each other independent of human intervention or participation.

Uniform Resource Locator (URL)

Uniform Resource Locator (URL) is the global address of documents and other resources on the World Wide Web. The first part of the address indicates what protocol to use (i.e. “http://”), and the second part specifies the IP address or the domain name where the resource is located (i.e. “www.firstgov.gov”).

Web Service

Web services (sometimes called application services) are services (usually including some combination of programming and data, but possibly including human resources as well) that are made available from a business’s web server for Web users or other Web-connected programs.

1.2.1.3. Web Browser

Define the program that serves as your front end to the World Wide Web on the Internet. In order to view a site, you type its address (URL) into the browsers location field.

Internet Explorer

Microsoft Internet Explorer (MSIE) is the most widely used World Wide Web browser.
<http://www.microsoft.com/windows/ie/default.asp>

Netscape Communicator

Netscape is the second most widely used World Wide Web browser.
<http://channels.netscape.com/ns/browsers/>

1.2.1.4. Wireless / PDA

Technology that uses transmission via the airwaves (Personal Digital Assistant) is a handheld computer that serves as an organizer for personal information. It generally includes at least a name and address database, to-do list and note taker.

Blackberry

The leading email enabled wireless device with wide use in several Agencies.
<http://www.blackberry.com/developers/na/index.shtml>

Palm Operating System

Palm is the leading Personal Digital Assistant (PDA). Version 5 of Palm OS provides multitasking and other capabilities that will provide an improved platform for E-Gov solutions.
<http://www.palmos.com/dev/>

Pocket PC 2000

Microsoft's environment for PDA level devices.
<http://www.microsoft.com/mobile/pocketpc/learnmore.asp>

Pocket PC Phone Edition

Microsoft's environment for internet capable cellular phones.
<http://www.microsoft.com/mobile/pocketpc/phoneedition/default.asp>

Symbian Epoc

A leading environment for web capable cellular phones.
<http://www.symbian.com/developer/index.html>

1.2.2. Delivery Channels

Delivery channels define the level of access to applications and systems based upon the type of network used to deliver them.

1.2.2.1. Extranet

An extranet is a private network that uses the Internet protocol and the public telecommunication system to securely share part of a business's information or operations with suppliers, vendors, partners, customers, or other businesses. An extranet can be viewed as part of a company's

intranet that is extended to users outside the company.

1.2.2.2. Internet

The internet is a worldwide system of computer networks in which users at any one computer can, if they have permission, get information from any other computer.

1.2.2.3. Intranet

An intranet is a private network that is contained within an enterprise. It may consist of many inter-linked local area networks and is used to share company information and resources among employees.

1.2.2.4. Peer to Peer (P2P)

Peer to Peer is a class of applications that operate outside the DNS system, and have significant or total autonomy from central servers that take advantage of resources available on the Internet.

1.2.2.5. Virtual Private Network (VPN)

A Private Data Network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunneling protocol and security procedures.

1.2.3. Service Requirements

Service Requirements define the necessary aspects of an application, system or service to include legislative, performance and hosting.

1.2.3.1. Authentication / Single Sign-on (SSO)

Refers a method that provides users with the ability to log-in one time, getting authenticated access to all their applications and resources.

1.2.3.2. Hosting

Refers to the service provider who manages and provides availability to a web site or application, often bound to a Service Level Agreement (SLA). The Hosting entity generally maintains a server farm with network support, power backup, fault tolerance, load-balancing, and storage backup.

Hosting: External (ISP/ASP/FirstGov)

The outsourcing of a web site or application with a managed service provider. An Internet Service Provider (ISP) provides telecommunications circuits, server co-location, and web site and application hosting. An Application Service Provider (ASP) offers software-based services for high-end business applications and specific-needs applications such as payroll, sales force automation, and human resources. FirstGov is the official managed service provider for the Federal Government.

Hosting: Internal (within Agency)

The hosting of a web site or application within an Agency. The Agency is responsible for the maintenance, support and availability of the web site or application.

1.2.3.3. Legislative / Compliance

Defines the pre-requisites that an application, system or service must have mandated by congress or governing bodies.

Privacy: Liberty Alliance

The Liberty Alliance Project is an alliance formed to deliver and support a federated network identity solution for the Internet that enables single sign-on for consumers as well as business users in an open, federated way. A federated network identity model will enable every business or user to manage their own data, and ensure that the use of critical personal information is managed and distributed by the appropriate parties, rather than a central authority.

Privacy: Platform for Privacy Preferences (P3P)

A specification that will allow users Web browsers to automatically understand Web sites privacy practices. Privacy policies will be embedded in the code of a Web site. Browsers will read the policy, and then, automatically provide certain information to specific sites based on the preferences set by the users. For instance, if the site is an e-commerce site, the browser will automatically provide shipping info. If the site is requesting demographic info, then the browser will know to provide it.

Section 508

Section 508 requires that Federal agencies electronic and information technology is accessible to people with disabilities, including employees and members of the public.

Security

Policy and procedures that protect data against unauthorized access, use, disclosure, disruption,

modification or destruction.

Web Content Accessibility

Refers to hardware and software that helps people who are physically or visually impaired.

1.2.4. Service Transport

Service Transport defines the end-to-end management of the communications session to include the access and delivery protocols.

1.2.4.1. Service Transport

These consist of the protocols that define the format and structure of data and information that is either accessed from a directory or exchanged through communications.

File Transfer Protocol (FTP)

A protocol used to transfer files over a TCP/IP network (Internet, UNIX, etc.). For example, after developing the HTML pages for a Web site on a local machine, they are typically uploaded to the Web server using FTP. <http://www.w3.org/Protocols/rfc959/Overview.html>

Hyper Text Transfer Protocol (HTTP)

The communications protocol used to connect to servers on the World Wide Web. It's primary function is to establish a connection with a web server and transmit HTML pages to the client browser. <http://www.w3.org/Protocols/>

Hyper Text Transfer Protocol Secure (HTTPS)

The protocol for accessing a secure Web server. Using HTTPS in the URL instead of HTTP directs the message to a secure port number rather than the default Web port number of 80. The session is then managed by a security protocol. <http://www.w3.org/Protocols/Specs.html>

Internet Protocol (IP)

This is the protocol of the Internet and has become the global standard for communications. IP accepts packets from TCP, adds its own header and delivers a "datagram" to the data link layer protocol. It may also break the packet into fragments to support the maximum transmission unit (MTU) of the network. <http://www.faqs.org/rfcs/rfc1349.html>

IP Security (IPSEC)

A set of protocols used to secure IP packet exchange. Tunnel and Transport are the two (2) modes supported by IPSEC. IPSEC uses certificates and Public Keys to authenticate and validate the sender and receiver. <http://www.ietf.org/html.charters/ipsec-charter.html>

Transport Control Protocol (TCP)

TCP provides transport functions, which ensures that the total amount of bytes sent is received correctly at the destination. <http://www.ietf.org/rfc/rfc0793.txt>

Wireless Application Protocol (WAP)

The Wireless Application Protocol (WAP) is an open, global specification that empowers users of digital mobile phones, pagers, personal digital assistants and other wireless devices to securely access and interact with Internet/intranet/extranet content, applications, and services. <http://www.wapforum.org/>

1.2.4.2. Supporting Network Services

These consist of the protocols that define the format and structure of data and information that is either accessed from a directory or exchanged through communications.

Border Gateway Protocol (BGP)

Refers to a routing protocol used to exchange routing information between routers on a network, enabling more efficient routing of data. BGP is part of RFC 1771. <http://www.arin.net/library/rfc/rfc1771.txt>

Directory Services (X.500)

This is a network service that discovers and identifies resources on a network and makes them accessible to users and applications. The resources include users, e-mail addresses, computers, mapped drives, shared folders, and peripherals such as printers and PDA docking stations. Users and computers access these resources without the needing to know how or where the resources are connected. <http://www.faqs.org/rfc/rfc2116.txt>

Domain Name System (DNS)

A protocol used for translating domain names (i.e. www.feapmo.gov) to their respective IP addresses. DNS is collectively a network of devices which store query results. As one DNS server or device cannot provide the translated IP address, it queries other DNS devices. This process is invisible to the user. <http://www.icann.org/icp/icp-1.htm>

Dynamic Host Configuration Protocol (DHCP)

A protocol for assigning dynamic IP addresses to devices on a network. A device can receive a different IP address at every connection. Dynamic addressing provides reduced network administration over deploying and connecting user and peripheral devices.

<http://ietfreport.isoc.org/rfc/rfc2300.txt>

Extended Simple Mail Transfer Protocol (ESMTP)

ESMTP allows new service extensions to SMTP to be defined and registered with Internet Assigned Numbers Authority (IANA). <http://ietfreport.isoc.org/rfc/rfc1869.txt>

H.323

H.323 addresses Video (Audiovisual) communication on Local Area Networks, including Corporate Intranets and packet-switched networks generally. <http://www.imtc.org/h323.htm>

Internet Message Access Protocol / Post Office Protocol

Internet Message Access Protocol (IMAP4 rev1) allows a client to access and manipulate electronic mail messages on a server. IMAP4 rev1 permits manipulation of remote message folders, called "mailboxes", in a way that is functionally equivalent to local mailboxes. IMAP4 rev1 also provides the capability for an offline client to resynchronize with the server. Post Office Protocol (POP3) is the most commonly used protocol for retrieving e-mail from a mail host. <http://www.imap.org/papers/docs/rfc2060.html>

Lightweight Directory Access Protocol (LDAP)

Lightweight Directory Access Protocol (LDAP) is a subset of X.500 designed to run directly over the TCP/IP stack. LDAP is, like X.500, both an information model and a protocol for querying and manipulating it. LDAPv3 is an update developed in the IETF (Internet Engineering Task Force), which address the limitations found during deployment of the previous version of LDAP. <http://www.opengroup.org/directory/branding/ldap2000/x99di.htm>

Multipurpose Internet Mail Extensions (MIME)

MIME extends the format of Internet mail to allow non-US- American Standard Code for Information Interchange (ASCII) textual messages, non-textual messages, multi-part message bodies, and non-US-ASCII information in message headers. MIME support allows compliant email clients and servers to accurately communicate embedded information to internal and external users. <http://www.mhonarc.org/~ehood/MIME/2045/rfc2045.html>

Simple Mail Transfer Protocol (SMTP)

SMTP facilitates transfer of electronic-mail messages. It specifies how two systems are to interact, and the messages format used to control the transfer of electronic mail.
<http://rfc.net/rfc821.html>

Simple Network Management Protocol (SNMP)

SNMP eliminates several of the security vulnerabilities in earlier version.
<http://www.ietf.org/rfc/rfc2570.txt?number=2570>

T.120

T.120 contains a series of communication and application protocols and services that provide support for real-time, multipoint data communications. These multipoint facilities are important building blocks for collaborative applications, including desktop data conferencing, and multi-user applications. <http://www.imtc.org/t120body.htm>

X.400

An ISO and ITU standard for e-mail message addressing and transporting. X.400 supports Ethernet, X.25, TCP/IP and dial-up transport methods. <http://www.faqs.org/rfcs/rfc1327.html>

1.3. Service Interface and Integration

The Service Interface and Integration Area define the discovery, interaction and communication technologies joining disparate systems and information providers. Component-based architectures leverage and incorporate Service Interface and Integration specifications to provide interoperability and scalability.

1.3.1. Integration

Integration defines the software services enabling elements of distributed business applications to interoperate. These elements can share function, content, and communications across heterogeneous computing environments. In particular, service integration offers a set of architecture services such as platform and service location transparency, transaction management, basic messaging between two points, and guaranteed message delivery.

1.3.1.1. Enterprise Application Integration

Refers to the processes and tools specializing in updating and consolidating applications and data within an enterprise. EAI focuses on leveraging existing legacy applications and data sources so

that enterprises can add and migrate to current technologies.

Application Connectivity

This process provides reusable, non-invasive connectivity with packaged software._ This connectivity is provided by uni- or bi-directional adapters.

Business Process Management

This process is responsible for the definition and management of cross-application business processes across the enterprise and/or between enterprises.

Transformation and Formatting

This process is responsible for the conversion of data, message content, information structure, and syntax to reconcile differences in data amongst multiple systems and data sources.

1.3.1.2. Middleware

Middleware increases the flexibility, interoperability, and portability of existing infrastructure by linking or “gluing” two otherwise separate applications.

Database Access: ISQL/w

Microsoft’s implementation of ANSI SQL

Database Access: NET8

NET8 (called SQL*NET prior to Oracle8) is Oracles client/server middleware product that offers transparent connection from client tools to the database, or from one database to another. SQL*Net/ Net8 works across multiple network protocols and operating systems. Previous versions referred to as SQL*Net.

Database Access: OPEN ANSI SQL/92

SQL is the information processing industry standard language of relational database management systems (RDMS). ANSI X3.135-1992 (also referred to as SQL-92 and ANSI SQL) is the industry standard for Database Language SQL. This standard promotes the portability and interoperability of database application programs and facilitates maintenance of database systems across heterogeneous data processing environments. SQL-92 provides a standardized way for embedding SQL statements into application dev

Database Access: PL/SQL

Oracles procedural extension to industry-standard SQL.

Message-Oriented Middleware (MOM): IBM Websphere MQ

APIs, queue management, message routing, automatic fail-over, and workload balancing that work together provide software message solutions in the middle tier.

Message-Oriented Middleware (MOM): Microsoft Message Queue

Microsoft Message Queue (MSMQ) software technology provides synchronous and asynchronous message queuing, routing, and security.

Object Request Broker (ORB): CORBA

Common Object Request Broker Architecture (CORBA) is an architecture that enables objects to communicate with one another regardless of what programming language they were written in or what operating system they're running on.

Object Request Broker (ORB): Component Object Model (COM)

A software architecture created by Microsoft to design and build component-based applications. COM object capabilities are accessible from exposed interfaces.

Object Request Broker (ORB): Component Object Model + (COM+)

COM+ is an extension of the COM that provides a runtime and services that are readily used from any programming language or tool, and enables extensive interoperability between components regardless of how they were implemented.

Object Request Broker (ORB): DCOM

Distributed Component Object Model (DCOM) is an extension of the Component Object Model (COM) that allows COM components to communicate across network boundaries. Traditional COM components can only perform inter-process communication across process boundaries on the same machine.

RPC

RPC is a protocol allowing a program on a client computer to invoke a program on a server computer. <http://www.faqs.org/rfcs/rfc1831.html>

Transaction Processing Monitor

Software providing synchronous messaging and queuing along with other transaction management services designed to support the efficient processing of high volumes of transactions. Core services include load balancing, rollback/commit, and recovery. Transaction Processing provides cost-effective scalability to applications and database systems by managing and throttling transactions on behalf of the database system

1.3.2. Interface

Interface defines the capabilities of communicating, transporting and exchanging information through a common dialog or method. Delivery Channels provide the information to reach the intended destination, whereas Interfaces allow the interaction to occur based on a predetermined framework.

1.3.2.1. Service Description / Interface

Defines the method for publishing the way in which web services or applications can be used.

Application Program Interface (API) / Protocol

A language and message format used by an application program to communicate with the operating system or some other control program such as a database management system (DBMS) or communications protocol. APIs are implemented by writing function calls in the program, which provide the linkage to the required subroutine for execution. Thus, an API implies that some program module is available in the computer to perform the operation or that it must be linked into the existing program to perform the required operation.

Web Services Description Language (WSDL)

WSDL is an XML based Interface Description Language for describing XML Web Services and how to use them. <http://www.w3.org/TR/wsdl>

1.3.2.2. Service Discovery

Defines the method in which applications, systems or web services are registered and discovered.

Universal Description Discovery and Integration (UDDI)

UDDI provides a searchable registry of XML Web Services and their associated URLs and WSDL pages. <http://www.uddi.org/about.html>

1.3.3. Interoperability

Interoperability defines the capabilities of discovering and sharing data and services across disparate systems and vendors.

1.3.3.1. Data Format / Classification

Defines the structure of a file. There are hundreds of formats, and every application has many different variations (database, word processing, graphics, executable program, etc.). Each format defines its own layout of the data. The file format for text is the simplest.

Electronic Data Interchange (EDI)

Defines the structure for transferring data between enterprises. EDI is mainly used for purchase-related information. ANSI X.12 refers to the approved EDI standards.
<http://www.disa.org/>

eXtensible Markup Language (XML)

XML has emerged as the standard format for web data, and is beginning to be used as a common data format at all levels of the architecture. Many specialized vocabularies of XML are being developed to support specific Government and Industry functions. <http://www.w3.org/XML/>

Namespaces

Namespaces are qualified references to URI (Uniform Resource Identifier) resources within XML documents. <http://www.w3.org/TR/REC-xml-names/>

XML Linking Language (XLINK)

A language used to modify XML documents to include links, similar to hyperlinks, between resources. XLINK provides richer XML content through advanced linking integration with information resources. <http://www.w3.org/TR/xlink/>

1.3.3.2. Data Transformation

Data Transformation consists of the protocols and languages that change the presentation of data within a graphical user interface or application.

eXtensible Stylesheet Language Transform (XSLT)

Transforms XML document from one schema into another. Used for data transformation

between systems using different XML schema, or mapping XML to different output devices.
<http://www.w3.org/Style/XSL/>

1.3.3.3. Data Types / Validation

Refers to specifications used in identifying and affirming common structures and processing rules. This technique is referenced and abstracted from the content document or source data.

Document Type Definition (DTD)

DTD is used to restrict and maintain the conformance of an XML, HTML, or SGML document. The DTD provides definitions for all tags and attributes within the document and the rules for their usage. Alterations to the document are validated with the referenced DTD.
<http://www.w3.org/TR/REC-html40/sgml/dtd.html>

XML Schema

XML Schemas define the structure, content, rules and vocabulary of an XML document. XML Schemas are useful in automation through embedding processing rules.
<http://www.w3.org/XML/Schema>

1.4. Service Platform and Infrastructure

The Service Platform and Infrastructure Area define the collection of platforms, hardware and infrastructure specifications that enable Component-Based Architectures and Service Component re-use.

1.4.1. Database / Storage

Database / Storage refers to a collection of programs that enables storage, modification, and extraction of information from a database, and various techniques and devices for storing large amounts of data.

1.4.1.1. Database

Refers to a collection of information organized in such a way that a computer program can quickly select desired pieces of data. A database management system (DBMS) is a software application providing management, administration, performance, and analysis tools for databases.

Database 2 (DB2)

Database 2 (DB2) is a family of relational database products offered by IBM. DB2 provides an open database environment that runs on a wide variety of computing platforms.
<http://www-3.ibm.com/software/data/db2/>

Oracle

Relational database product first to support the SQL language.
<http://www.oracle.com/ip/dep/otn/database/oracle9i/>

SQL Server

Data management server product developed by Microsoft. <http://www.microsoft.com/sql/>

Sybase

Data management and synchronization server products developed by Sybase.
<http://www.sybase.com/products/databaseservers>

1.4.1.2. Storage

Storage devices are designed to provide shared storage access across a network. These devices provide extended storage capabilities to the network with reduced costs compared to traditional file servers.

Network-Attached Storage (NAS)

A NAS device is a server that is dedicated to nothing more than file sharing.

Storage Area Network (SAN)

A SAN is a high-speed sub-network of shared storage devices. A storage device is a machine that contains nothing but a disk or disks for storing data.

1.4.2. Delivery Servers

Delivery Servers are front-end platforms that provide information to a requesting application. It includes the hardware, operating system, server software, and networking protocols.

1.4.2.1. Application Servers

In a three-tier environment, a separate computer (application server) performs the business logic, although some part may still be handled by the user's machine. After the Web exploded in the mid 1990s, application servers became Web based.

1.4.2.2. Media Servers

Provide optimized management of media-based files such as audio and video streams and digital images.

Real Audio

Streaming media server solution designed to supply desktop and mobile content.

<http://www.realnetworks.com/solutions/enterprise/index.html>

Windows Media Services

Part of Windows Server (2000 and .Net) optimized to deliver streaming media and dynamic digital content over intranet and internet delivery channels.

<http://www.microsoft.com/windowsserver2003/technologies/winmedia/default.msp>

1.4.2.3. Portal Servers

Portals represent focus points for interaction, providing integration and single-source corporate information.

1.4.2.4. Web Servers

A computer that provides World Wide Web services on the Internet. It includes the hardware, operating system, Web server software, TCP/IP protocols and the Web site content (Web pages). If the Web server is used internally, and not by the public, it may be known as an "intranet server."

Apache

A widely-used public domain, UNIX-based Web server from the Apache Group (www.apache.org). It is based on, and is a plug-in replacement for, NCSA's HTTPd server Version 1.3. The name came from a body of existing code and many "patch files."

<http://www.apache.org/>

Internet Information Server

Web server software from Microsoft that runs under Windows NT, Windows 2000, and Microsoft.Net. It supports Netscape's SSL security protocol and turns an NT-based PC into a Web site. Microsoft's Web browser, Internet Explorer, is also included.

<http://www.microsoft.com/windowsserver2003/evaluation/overview/technologies/iis.msp>

1.4.3. Hardware / Infrastructure

Defines the physical devices, facilities and standards that provide the computing and networking within and between enterprises.

1.4.3.1. Embedded Technology Devices

This refers to the various devices and parts that make up a Server or Computer as well as devices that perform specific functionality outside of a Server or Computer.

Hard Disk Drive

Refers to the area of a computer that where data is stored.

Microprocessor

A silicon chip that contains a CPU. In the world of personal computers, the terms microprocessor and CPU are used interchangeably. At the heart of all personal computers and most workstations sits a microprocessor.

RAID

An assembly of disk drives that employ two or more drives in combination for fault tolerance and performance. RAID disk drives are used frequently on servers but aren't generally necessary for personal computers. RAID is generally configured as mirrored or striped. Mirrored RAID (Level 1) provides a fail-over drive. Striped RAID (Levels 0, 3, and 5) write data across multiple disk drives so that a single disk failure can be recovered from the data on the remaining drives. There are three (3)

Random Access Memory (RAM)

A type of computer memory that can be accessed randomly; that is, any byte of memory can be accessed without touching the preceding bytes. RAM is the most common type of memory found in computers and other devices, such as printers.

1.4.3.2. Local Area Network (LAN)

A network that interconnects devices over a geographically small area, typically in one building or a part of a building. The most popular LAN type is Ethernet. LANs allow the sharing of resources and the exchange of both video and data.

Ethernet

local-area network (LAN) architecture that uses a bus or star topology and supports data transfer rates of 10 Mbps, 100 Mbps (Fast Ethernet) or 1 Gbps (gigabit Ethernet). The Ethernet specification served as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers. Ethernet uses the CSMA/CD access method to handle simultaneous demands. It is one of the most widely implemented LAN standards.

<http://grouper.ieee.org/groups/802/3/>

Token Ring

A type of computer network in which all the computers are arranged (schematically) in a circle. A token, which is a special bit pattern, travels around the circle. To send a message, a computer catches the token, attaches a message to it, and then lets it continue to travel around the network.

<http://www.8025.org/>

Virtual LAN (VLAN)

Short for virtual LAN, a network of computers that behave as if they are connected to the same wire even though they may actually be physically located on different segments of a LAN. VLANs are configured through software rather than hardware, which make them extremely flexible. One of the biggest advantages of VLANs is that when a computer is physically moved to another location, it can stay on the same VLAN without any hardware reconfiguration.

<http://www.ieee802.org/1/pages/802.1Q.html>

1.4.3.3. Network Devices / Standards

A group of stations (computers, telephones, or other devices) connected by communications facilities for exchanging information. Connection can be permanent, via cable, or temporary, through telephone or other communications links. The transmission medium can be physical (i.e. fiber optic cable) or wireless (i.e. satellite).

Digital Subscriber Line (DSL)

Refers collectively to all types of digital subscriber lines, the two main categories being ADSL and SDSL. Two other types of xDSL technologies are High-data-rate DSL (HDSL) and Very high DSL (VDSL). <http://www.faqs.org/faqs/datacomm/xdsl-faq/>

Firewall

This refers to the network device that is designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially intranets. There are several types of

firewall techniques and firewalls may implement one or more simultaneously. Packet filtering inspects inbound and outbound

Gateway

Gateways are points of entrance to and exit from a communications network. Viewed as a physical entity, a gateway is that node that translates between two otherwise incompatible networks or network segments

Hub

A common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. When a packet arrives at one port, it is copied to the other ports so that all segments of the LAN can see all packets.

Integrated Services Digital Network (ISDN)

ISDN is a system of digital phone connections which has been available for over a decade. This system allows data to be transmitted simultaneously across the world using end-to-end digital connectivity. <http://www.eff.org/Infra/ISDN/>

Network Interface Card (NIC)

Often abbreviated as NIC, an expansion board you insert into a computer so the computer can be connected to a network. Most NICs are designed for a particular type of network, protocol, and media, although some can serve multiple networks.

Router

A device or setup that finds the best route between any two networks, even if there are several networks to traverse. Like bridges, remote sites can be connected using routers over dedicated or switched lines to create WANs.

Switch

In networks, a device that filters and forwards packets between LAN segments. Switches operate at the data link layer (layer 2) and sometimes the network layer (layer 3) of the OSI Reference Model and therefore support any packet protocol. LANs that use switches to join segments are called switched LANs or, in the case of Ethernet networks, switched Ethernet LANs.

T1/T3

T1 service delivers 1.544 Mbps. Typically channelized into 24 DS0s, each capable of carrying a

single voice conversation or data stream. The European T1 or E1 transmission rate is 2.048 million bits per second. A T3 circuit communicates at 45 Mbps, or 28 T1 lines.
<http://www.t1.org/>

Transceivers

Short for transmitter-receiver, a device that both transmits and receives analog or digital signals. The term is used most frequently to describe the component in local-area networks (LANs) that actually applies signals onto the network wire and detects signals passing through the wire. For many LANs, the transceiver is built into the network interface card (NIC). Some types of networks, however, require an external transceiver.

1.4.3.4. Peripherals

Computer devices that are not part of the essential computer (i.e. the memory and microprocessor). Peripheral devices can be external and internal.

Printer

Devices that print text or illustrations on paper. There are many different types of printers.

Scanner

Devices that can read text or illustrations printed on paper and translate the information into a form the computer can use. A scanner works by digitizing an image -- dividing it into a grid of boxes and representing each box with either a zero or a one, depending on whether the box is filled in.

1.4.3.5. Servers / Computers

This refers to the various types of programmable machines which are capable of responding to sets of instructions and executing programs.

Enterprise Server

A computer or device on a network that manages network resources and shared applications for multiple users.

Mainframe

A very large computer capable of supporting hundreds, or even thousands, of users simultaneously. Mainframes support simultaneous programs.

1.4.3.6. Video Conferencing

Communication across long distances with video and audio contact that may also include graphics and data exchange. Digital video transmission systems typically consist of camera, codec (coder-decoder), network access equipment, network, and audio system.

Bridge

A bridge connects three or more conference sites so that they can simultaneously pass data, voice, or video. Videoconferencing bridges are often called MCUs (multipoint conferencing units).

CODEC

A video codec converts analog video signals from a video camera to digital signals for transmission over digital circuits, and then converts the digital signals back to analog signals for display.

Receiver

An electronic device which enables a particular videoconference signal to be separated from all others being received by an earth station, and converts the signal format into a format for video, voice or data.

1.4.3.7. Wide Area Network (WAN)

A data network typically extending a LAN outside a building or beyond a campus. Typically created by using bridges or routers to connect geographically separated LANs. WANs include commercial or educational dial-up networks such as CompuServe, Internet and BITNET.

Asynchronous Transfer Mode (ATM)

A high bandwidth, high speed, controlled-delay, fixed-size packet switching and transmission system integrating multiple data types (voice, video, and data). Uses fixed-size packets also known as "cells" (ATM is often referred to as "cell relay").
http://www.iec.org/online/tutorials/atm_fund/

Frame Relay

Packet-switching protocol for connecting devices on a Wide Area Network (WAN). Frame Relay networks in the U.S. support data transfer rates at T-1 (1.544 Mbps) and T-3 (45 Mbps) speeds. <http://www.frforum.com/>

1.4.4. Software Engineering

Software engineering covers not only the technical aspects of building software systems, but also management issues, such as testing, modeling and versioning.

1.4.4.1. Integrated Development Environment (IDE)

This consists of the hardware, software and supporting services that facilitate the development of software applications and systems.

Visual Studio

A complete development system providing the tools for analyzing and modeling all aspects of an application before a single component is built so that developers can design efficient architectures and reduce time to market. Developers can choose the programming language they know best and the language that is best suited to the solution, including Microsoft Visual Basic, Visual C++, Visual J++, and Visual FoxPro. Visual Studio is used to build scalable, data-driven Web sites and applications.

Visual Studio.Net

A comprehensive tool set for rapidly building and integrating XML Web services, Microsoft Windows based applications, and Web solutions. This is the successor to Visual Studio.
<http://msdn.microsoft.com/vstudio/productinfo/default.asp>

Websphere Studio

Integrated Java (J2EE) environment for programmers build Java, web, and web services applications. Successor to IBM Visual Age.
<http://www-3.ibm.com/software/awdtools/studiositedev/>

1.4.4.2. Modeling

The process of representing entities, data, business logic, and capabilities for aiding in software engineering.

Case Management

Computer Aided Software Engineering (CASE) software that provides a development environment for programming teams. CASE systems offer tools to automate, manage and simplify the development process. http://www.sei.cmu.edu/legacy/case/case_what.html

Unified Modeling Language (UML)

A general-purpose notational language for specifying and visualizing complex software, especially large, object-oriented projects. http://www.omg.org/gettingstarted/what_is'uml.htm

1.4.4.3. Software Configuration Management

Applicable to all aspects of software development from design to delivery specifically focused on the control of all work products and artifacts generated during the development process. Several solutions on the market provide the integration of the software configuration management functions.

Change Management

Refers to the management of application code and content changes across the software development lifecycles.

Defect Tracking

Refers to the identification, assignment, and management of discovered defects within an application, product or solution. Defect tracking tools provide searchable defect data to identify urgent and related defects or bugs. The architecture should be built to facilitate the pushing of software patches across the enterprise.

Deployment Management

Refers to the capability of software delivery to remote networked desktops, servers, and mobile devices across an enterprise. Deployment automation tools provide centralized and accelerated delivery of applications to users via push technologies, eliminating the need for manual installation and configuration.

Issue Management

Refers to the management of business, technical, and infrastructure issues throughout the entire lifecycle of a project.

Requirements Management and Traceability

Consists of information discovery, capture, storage and dissemination. Requirements management reduces software development costs and associated risks through documenting, measuring, and analyzing deviations to project requirements. Traceability refers to tracking requirements artifacts to their source and to changes in requirements and the impact analysis of

change. Requirements traceability is an integral component in quality software implementation and the management of document succession

Task Management

Requirements, testing, and issues assignments are transformed into prioritized tasks. Task Management tools provide automation features for managing, delivering, assigning, reminding, and collaborating task management and execution.

Version Management

Refers to tracking and controlling versions of files. Version Management includes capabilities such as labeling, branching, merging, version content comparisons, and security and permission management across version-controlled projects.

1.4.4.4. Test Management

The consolidation of all testing activities and results. Test Management activities include test planning, designing (test cases), execution, reporting, code coverage, and heuristic and harness development.

Business Cycle Testing

Refers to the emulation of activities performed over a period of time that is relevant to the application under test.

Configuration Testing

Refers to a test to ensure that the application or system can handle all hardware and software variables and requirements that have been defined.

Functional Testing

This type of test focuses on any requirements that can be traced directly to use cases (or business functions), business rules, and design.

Installation Testing

Refers to the verification that the software installation process works properly in different environments and among varying conditions.

Load/Stress/Volume Testing

Refers to tests that measure and evaluate how a system performs and functions under varying workloads, large amounts of data and/or resource utilization.

Performance Profiling

Refers to a performance test that measures and evaluates response times and transaction rates.

Reliability Testing

Refers to the verification that failover methods are invoked properly and the system recovers properly.

Security and Access Control Testing

Focuses on the technical, administrative and physical security controls that have been designed into the system architecture in order to provide confidentiality, integrity and availability.

Usability Testing (508 Testing)

Refers to a test to ensure that the application navigation, functionality, and GUI allow a user to effectively and efficiently do their work in a way that they are satisfied with the application.

1.4.5. Supporting Platforms

Supporting platforms are hardware or software architectures. The term originally dealt with only hardware, and it is still used to refer to a CPU model or computer family.

1.4.5.1. Platform Dependent (MS)

Consists of the programming languages and methods for developing software on a specific operating system or platform.

Mac OS X

Mac OS X is Apples UNIX based operating system based on industry standards. Launched in March 2001, OS X has advanced built-in security functions and complete interoperability with both internet standards and Microsoft products. See <http://www.apple.com/macosx>

Windows 2000

Also known as "Win2K" and "W2K," it is a major upgrade to Windows NT 4. Launched in February 2000, Windows 2000 comes in one client and three server versions. Windows 2000 looks like Windows 95/98, but adds considerably more features, dialogs and options.

<http://www.microsoft.com/windows/default.msp>

Windows.Net

Microsoft's .Net and Sun's J2EE are the two dominant distributed computing architecture frameworks. .Net supports a wide range of languages but is primarily tied to the Microsoft Windows operating system and Intel hardware.

<http://www.microsoft.com/net/products/default.asp>

1.4.5.2. Platform Independent (J2EE)

Defines the programming languages that are able to execute and run on any platform or operating system.

Java 2 Platform Enterprise Edition (J2EE)

Sun's J2EE and Microsoft's .Net are the two dominant distributed computing architecture frameworks. J2EE provides portability of a single language (Java) over multiple operating systems and hardware platforms. <http://java.sun.com/j2ee/download.html#platformspec>

Linux

Linux is an open source operating system that runs on multiple hardware platforms. With the ability to run on many platforms, including the PC and Macintosh, Linux has become an alternative to proprietary systems. See <http://www.linux.org/>

1.4.5.3. Wireless / Mobile

Radio transmission via the airwaves. Various communications techniques are used to provide wireless transmission including infrared line of sight, cellular, microwave, satellite, packet radio and spread spectrum.

Java 2 Platform, Micro Edition (J2ME)

Sun's Java environment for devices. It promises a relatively portable environment for those using Java for other tiers of the architecture. <http://java.sun.com/j2me/docs/>